**Algebra II Name:**

**Unit 2: Linear Functions Date:**

**Review Packet**

1. A friend asks you to explain what a *linear function* is. Give as clear and precise of an explanation as possible

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1. Give as clear and precise of an explanation of what the *rate of change/slope* of a linear function is.

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1. Give as clear and precise of an explanation of what a *solution* to a linear question is.

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1. Give as clear and precise of an explanation of what a *solution* to a system of linear equations is.

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1. How many solutions could there be to a system of linear equations? Explain each of the three possibilities. Drawing a picture might help.

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1. Provide **at least two** definitions/explanations for what each variable represents in the slope-intercept form of a linear equation.

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| 1. Use the following pattern to answer the questions below.     **Step 1 Step 2 Step 3**   1. Write the **equation** that represents this pattern. 2. Summarize the relationship between the number of squares and the step number using a **table/chart** and then with a **graph**. Don’t forget to label your axis! 3. How many squares will there be in Step 43? 4. If you followed the pattern and drew a step with 304 squares, what step number did you draw? |

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| 1. You have $40 in your bank account when you decide to start a tutoring business. After adjusting for the cost of tutoring materials, you figure out that you can make $10 per hour that you tutor. |
| a. Write an equation in slope-intercept form to represent this situation. |
| b. Describe what the **two variables** and the **two numbers** in your equation represent.  \_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| c. Graph this situation on the first quadrant of the coordinate plane. Don’t forget to label your axis! |
| c. How much money will you have in your bank account if you tutor for 12 hours? |
| d. How many hours will you have to tutor in order to have $250 in your bank account? |

1. You’re late meeting up with a friend, so you decide to take a taxi. You look at the meter while you’re riding and notice that after three going three miles, your fare is $9.75. After ten miles, your fare is $25.50.
   1. Write an equation that represents the total cost of your trip as a function of the miles driven.
   2. How much would it cost to drive 20 miles at this rate?
2. Write the equation for the following lines:

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| https://burnsgeometry.wikispaces.com/file/view/06m07q09.gif/170441541/276x275/06m07q09.gif  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | https://burnsgeometry.wikispaces.com/file/view/06m07q09.gif/170441541/276x275/06m07q09.gif  Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 1. Graph each line on the coordinate plane. Extend and properly NAME your lines, and use a straight edge. |
| a.b. c. d.  https://burnsgeometry.wikispaces.com/file/view/06m07q09.gif/170441541/276x275/06m07q09.gif |

1. Determine the *x*  and *y* intercepts for the following linear functions.

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| ***x* intercept:** ( \_\_\_\_\_ , \_\_\_\_\_ )  ***y* intercept:** ( \_\_\_\_\_ , \_\_\_\_\_ ) | ***x* intercept:** ( \_\_\_\_\_ , \_\_\_\_\_ )  ***y* intercept:** ( \_\_\_\_\_ , \_\_\_\_\_ ) |

1. Write the equation for each of the following representations of linear functions.

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| |  |  | | --- | --- | |  |  | | **-1** | **5** | | **4** | **-15** | | **2** | **-7** | | **-2** | **9** |   **Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **A linear function that has a rate of change of -3 and passes through the point (2, 5).**  **Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

1. Solve the following systems using the prescribed method:

Solve using **substitution:**

Solve using **elimination:**

Solve using **elimination:**

1. You stop at an ATM to get some cash. The ATM gives you 14 bills for a total of $85 using only 10 dollar bills and 5 dollar bills.
   1. Write a system of equations that models this situation.
   2. Determine how many $5 bills and how many $10 bills you got.
2. At a basketball game, you notice that WLPCS’s star player scored a total of 36 points by making 15 shots. If the player only made 2-point shots and 3-point shots, how many shots were 2-pointers and how many were 3-pointers?
   1. Write a system of equations that models this situation.
   2. Determine how many 2-point shots and how many 3-point shots the player made.